have the same root, and receive their power from the same source; and that when injured in their common origin, there is a simultaneous cessation of motion in all the apparatus of respiration, that breathing instantly ceases, and with it life.

Touching on Pathology, he assigns reasons for believing that sudden death, when there is no apparent injury of vital organs, is by disorder of this division of the nervous system.

Having distinguished these nerves from the common voluntary and sensible nerves on the one hand, and from the sympathetic system on the other, he proceeds to show that expression is seated in these nerves. That they are not merely the nerves which order the motions of breathing, the nerves of natural and articulate language, but that through them the breast, chest, and face become the organs of expression, whenever the heart is agitated by sentiment or passion; and that without their instrumentality, the utmost agitation of the spirits in passion would be attended with no outward sign.

Experiments and Observations on the Newry Pitch-stone, and its Products, and on the Formation of Pumice. By the Right Hon. George Knox, *F.R.S.* Read May 9, 1822. [*Phil. Trans.* 1822, *p.* 313.]

After describing the geological locality and the external character of the above mineral, and adverting particularly to its oily smell, Mr. Knox proceeds to show, by its chemical analysis, that, exclusive of the constituents of this substance ascertained by Klaproth, it contains a considerable but variable proportion of a peculiar bitumen, separable from it by distillation at high temperatures. The author also succeeded in detecting some volatile principle in the pitch-stone of Meisser, analysed by Klaproth, as also in that of Arran; but it exists in them in smaller quantities than in the pitch-stone of Newry.

After having separated the water and bitumen from the mineral by heat, Mr. Knox found that by subjecting the residue to a bright red heat, it assumed not merely the appearance, but the properties of pumice; and he attributes this appearance to the slow escape of the bituminous matter, producing a vesicular structure.

The author details in this paper the process of analysis which he employed for the separation of the constituent parts of this pitch-stone, and adverts to those circumstances in which it appears to differ from the varieties of the mineral previously examined.

Observations on the Changes the Egg undergoes during Incubation in the common Fowl, illustrated by Microscopical Drawings. By Sir Everard Home, *Bart. V.P.R.S.* Read May 16, 1822. [*Phil. Trans.* 1822, *p.* 339.]

The molecule from which the future embryo is to be formed, is observed upon the surface of the yolk before it leaves the ovarium. It consists of globules $\frac{1}{2\,8\,0\,0}$th of an inch in diameter, surrounded by a mixture of these and larger oval globules, similar to those of the

bird's blood, excepting their red colour; some oil is also discoverable. In the passage of the yolk along the oviduct, it acquires the albumen and its membrane; in this passage also the thread-like substances, which Mr. Hunter called the poles, were formed. Sir Everard next describes the changes which the egg undergoes during incubation. In four hours the rudiments of the embryo are perceptible; and in eight hours the brain and spinal marrow are surrounded by an amnion, all of which increase in distinctness for the first twenty-four hours. In thirty-six hours the intervertebral nerves and the lobular structure of the brain, and in forty-four hours the eye and heart are seen, and in two days and twelve hours it contained red blood, and arterial ramifications began to be formed. In three days the rudiments of the wings and legs were formed. These parts progressively increase until the sixth day, when the amnion is filled with water, and shortly afterwards the parietes of the thorax begin to form, and muscular action becomes evident. In seven days and twelve hours arterial pulsation was first perceived; and in eight days and twelve hours the liver was seen. In ten days and twelve hours the cutis was covered with cuticle, and the gizzard and intestinal canal were formed. The above, as well as several intermediate changes, are illustrated by drawings, and the author concludes the paper with some observations upon the circumstances in which the changes observed during the incubation of the egg, differ from those which occur in the ovum of the quadruped.

Some Observations on Corrosive Sublimate. *By* John Davy, *M.D. F.R.S.* Read June 6, 1822. [*Phil. Trans.* 1822, *p.* 357.]

It has sometimes been stated that corrosive sublimate suffers decomposition by exposure to light; but Dr. Davy found this not to be the case with the dry salt. Its aqueous solution, however, and especially its solution in proof spirit (the Liquor Hydr. Oxymur. of the Pharmacopœia), when exposed to sunshine, deposits a little calomel, and forms muriatic acid. The alcoholical and ethereal solutions suffer no such change; nor do the aqueous solutions, to which small quantities of muriatic acid and of muriate of ammonia have been added.

The author found corrosive sublimate soluble in water at 57°, in the proportion of 5·4 per cent. Alcohol at 60° dissolved half its weight, and ether about one third its weight. Heated with oil of turpentine, corrosive sublimate gives rise to the formation of muriatic acid and calomel, carbon is deposited, and a little artificial camphor produced; with other oils the changes are of a similar description.

Muriatic acid of sp. gr. 1·158 at 74°, dissolves twice its weight of corrosive sublimate, the specific gravity of the resulting solution being 2·412; when the temperature of this solution is somewhat lowered, it concretes into a mass of acicular crystals.

Nitric acid at the temperature of 90°, does not dissolve corrosive sublimate, nor does sulphuric acid.

A mixture of 34 parts of corrosive sublimate, and 6·75 of muriate